UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2004/00616

July 7, 2004

Mr. Lawrence C. Evans, Chief
Regulatory Branch
U.S. Army Corps of Engineers
ATTN: John Barco
P.O. Box 2946
Portland, Oregon 97208-2946

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Parson's Site Off-Channel Fish Rearing Habitat Project, Clackamas River, Near River Mile 13.2, Clackamas County, Oregon (Corps No.: 200400270)

Dear Mr. Evans:

Enclosed is a biological opinion and conference opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) that addresses issuance of a permit by the Corps of Engineers (COE) to the Oregon Wildlife Heritage Foundation (OWHF) for the proposed Parson's Site Off-Channel Fish Rearing Habitat Project on the Clackamas River near River Mile 13.2 in Clackamas County, Oregon. NOAA Fisheries concludes in this Opinion that the proposed action is not likely to jeopardize the continued existence of listed Lower Columbia River (LCR) Chinook salmon (*Oncorhynchus tshawytscha*), Upper Willamette River Chinook salmon, or LCR steelhead (*O. mykiss*). This Opinion includes reasonable and prudent measures with terms and conditions that are necessary to minimize the potential for incidental take associated with this action.

NOAA Fisheries also concludes that the proposed action is not likely to jeopardize the continued existence of LCR coho salmon, (*Onchorynchus kisutch*), which are proposed for listing as threatened under the Endangered Species Act. As required by section 7 of the ESA, NOAA Fisheries has included an incidental take statement with reasonable and prudent measures and nondiscretionary terms and conditions that are necessary to minimize the impact of incidental take associated with this action. However, the incidental take statement does not become effective until NOAA Fisheries adopts this conference opinion as a biological opinion, after the listing is final. Until the time that the species is listed, the prohibitions of the ESA do not apply.

This document also serves as consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and includes conservation recommendations to avoid, minimize, or otherwise offset potential adverse

effects to EFH. Section 305(b)(4)(B) of the MSA requires Federal agencies to provide a detailed written response to NOAA Fisheries within 30 days after receiving these recommendations. If the response is inconsistent with the recommendations, the action agency must explain why the recommendations will not be followed, including the justification for any disagreements over the effects of the action and the recommendations.

If you have any questions regarding this consultation, please contact Ron Lindland of my staff in the Willamette Basin Habitat Branch of the Oregon State Habitat Office at 503.231.2315.

Sincerely,

For Michael R Crouse

D. Robert Lohn
Regional Administrator

cc: John Barco, COE
Jason Smith, Inter-fluve, Inc.

Endangered Species Act - Section 7 Consultation Biological Opinion and Conference Opinion

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Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

Parson's Site Off-Channel Fish Rearing Habitat Project
Clackamas River, Near River Mile 13.2
Clackamas County, Oregon
(Corps No.: 200400270)

Agency:	U.S. Army Corps of Engineers, Portland District
Consultation Conducted By:	NOAA's National Marine Fisheries Service, Northwest Region
Date Issued:	July 7, 2004
Issued by:	for Michael R Crouse _____ D. Robert Lohn Regional Administrator
Refer to:	**2004/00616**

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Consultation History

On May 28, 2004, NOAA's National Marine Fisheries Service (NOAA Fisheries) received a letter dated May 27, 2004, and a biological assessment (BA) dated April 12, 2004, from the Corps of Engineers (COE) requesting formal Endangered Species Act (ESA) and Magnuson-Stevens Fishery Conservation and Management Act (MSA) consultation on the effects of a proposed project to create off-channel fish rearing habitat at the Parson's Site on the Clackamas River at river mile (RM) 13.2 on Lower Columbia River (LCR) Chinook salmon (*Oncorhynchus tshawytscha*), Upper Willamette River (UWR) Chinook salmon, and LCR steelhead (*O. mykiss*). Although the COE did not request conferencing under the ESA for LCR coho salmon (*O. kisutch*), this biological and conference opinion (Opinion) also addresses that species, which was proposed for listing on June 14, 2004 (69 FR 33102).

In the BA, the COE determined that the proposed project is "likely to adversely affect" (LAA) LCR and UWR Chinook salmon, and LCR steelhead. Major funding for the project has been provided to the Oregon Wildlife Heritage Foundation (OWHF) by Portland General Electric (PGE). Project cooperators include the Oregon Department of Fish and Wildlife (ODFW) and Metro Regional Parks and Greenspaces (METRO).

NOAA Fisheries listed LCR steelhead as threatened under the ESA on March 19, 1998 (63 FR 13347). NOAA Fisheries listed LCR and UWR Chinook salmon as threatened on March 24, 1999 (64 FR 14308). NOAA Fisheries issued protective regulations for all three evolutionarily significant units (ESU) under section 4(d) of the ESA on July 10, 2000 (65 FR 42422)

The objective of this Opinion is to determine whether the activities associated with creation of the proposed Parson's Site Off-Channel Fish Rearing Habitat Project are likely to jeopardize the continued existence of LCR steelhead, LCR Chinook salmon, UWR Chinook salmon, or LCR coho salmon.

The objective of the essential fish habitat (EFH) consultation is to determine whether the proposed action may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

1.2 Proposed Action

The proposed action is the issuance of a permit by the COE under section 404 of the Clean Water Act to authorize the Parson's Site Off-Channel Fish Rearing Habitat Project on the Clackamas River near RM 13.2 (T2S, R3E, Section 22). All construction activities will take place on property owned by METRO. The proposed action will authorize the following activities:

- Construction of a 2,600-foot long, groundwater-fed side-channel along the south bank of the Clackamas River (hereinafter referred to as Site 1).

- Construction of a 1,650-foot long, flow-through side-channel along the south bank of the Clackamas River upstream from and partially paralleling Site 1 (hereinafter referred to as Site 2).

- Modifying the downstream end of an existing side-channel on the north side of the Clackamas River to allow access by juvenile salmonids (hereinafter referred to as Site 3)

Sites 1 and 2 will be constructed on the south side of the Clackamas River downstream from Barton Bridge (Bakers Ferry Road). Both side channels will be within historic Clackamas River channel alignments. Site 1 is intended to provide principal fish habitat benefits during the summer months, while Site 2 is intended to provide habitat benefits during winter months. Site 3 will be on the north side of the river just upstream from the other two sites, and will provide rearing habitat at all river flows more than 1,000 cfs. Large woody debris imported from off-site will be placed throughout the length of each side channel to increase cover and habitat complexity in the channels.

Site 1: Groundwater-Fed, Wall-Based[1] Channel

This channel will begin downstream of an existing road fill that prevents Clackamas River flood flows from entering the proposed channel alignment. This channel will be approximately 2,600 feet long, with an average bottom width varying from 3 to 5 feet, designed for flows of 5 cubic feet per second (cfs) or less. Average cross-sectional water velocities will be approximately 1 cfs, with a slope around 0.0025 vertical foot/linear foot. According to the BA, Site 1 is anticipated to convey small late season discharges derived from hyporheic groundwater seepage. Based on test pit data collected in December, there appears to be a high likelihood that groundwater contributions will occur and extend the functional benefit of habitat in this lower channel beyond what will otherwise be possible when relying on surface water sources alone.

Additional sources of water for this channel will be provided by construction of two shallow water collection galleries in the vicinity of the upstream side channel (Site 2). Water collection gallery "A" will be installed beneath the upper channel (below the channel grade) and deliver hyporheic flow to the lower channel (Site 1) during flow events in Site 2 (upper channel) that exceed 5 cfs (expected to be November through June). Water collection gallery "B" will be installed outside the upper channel nearer the Clackamas River. According to the BA, gallery "B" is expected to provide approximately 0.1 cfs of hypothetic flow to the lower channel (Site 1) when the Clackamas River is flowing at 1,000 cfs (approximately the 95% exceedance flow).

[1] The term "wall-based channel" refers to channels that occur naturally on the active floodplain of a river at the base of valley walls or terraces. Depending on the hydrology of the area, groundwater can discharge at these locations and stream channels form to convey the groundwater on the active floodplain. Where these habitats occur, they are often very productive and provide an important source of cold water during the warmer summer months.

Water from the collection galleries will be conveyed from the vicinity of Site 2 to the lower channel (Site 1) via buried 12-inch diameter groundwater collection pipes.

According to the BA, a backwater slough will be present at the lower end of Site 1, from November through June, at flows greater than 1,000 cfs. At this flow, backwater conditions will extend approximately 160 feet; at ordinary high water conditions, the backwater will extend all 2,600 feet.

To prevent or retard the likelihood of future capture of Site 1 by the Clackamas River, two log jams will be constructed between the river and the constructed side channel. The log jams will consist of cedar and/or fir logs and 1 to 2 cubic yard boulders. The logs and boulders will be cabled together.

Site 2: Flow-Through Channel

The upper channel (Site 2) will function as a flow-through channel accessible at all Clackamas River flows greater than 1,000 cfs. This side channel will be approximately 1,650 feet long and have an average slope of 0.0025 vertical foot/linear foot. Average cross-sectional water velocities in this channel will be approximately 2 feet/second. Grade control logs and a log jam complex will be constructed at the inlet of this channel to limit the amount of water and elevation where water enters the constructed channel from the Clackamas River. According to the BA, the 1,000 cfs threshold for channel activation was selected based on information in the "Clackamas River Hydroelectric Project Biological Opinion" (NOAA 2003) and historic data. Based on historic data, 1,000 cfs is equaled or exceeded approximately 95% of the time during the months of November through June, and provides reasonable assurance of providing usable seasonal habitat in the constructed side channel during these months.

Site 2 will be designed to provide rearing habitat for juvenile salmonids from November to June. Surface water will flow through this channel, and the potential for small amounts of additional groundwater seepage may contribute incrementally to flow volumes. A backwater slough will be present at the downstream end of this channel from November through June. At a flow of 1,000 cfs in the Clackamas River, the slough will be approximately 250 feet long.

Site 3: Existing Side Channel

An existing side channel on the north side of the Clackamas River will be excavated at the downstream end to provide access by juvenile salmonids when river flows are 1,000 cfs or greater.

Introduction of Water to the Constructed Side Channels

Once side channel construction is completed, water from the Clackamas River will be introduced gradually into the lower, backwater portions of the channels by a staged removal of the gravel coffer dams at the lower ends of the channels. Any potential groundwater flows at Site 1 will naturally discharge along the length of this channel. Water will be introduced to the Site 2 channel based on the Clackamas River stage elevation. Water will begin flowing into this channel when Clackamas River flows exceed 1,000 cfs. If flows are less than 1,000 cfs at the

time the project is completed, then Site 2 will remain dry until flows exceed 1,000 cfs. If flows are in excess of 1,000 cfs at the time of project completion, then water will be released gradually into the side channel at Site 2 over a period of one or more hours.

1.2.1 Construction Activities

General Construction

The project area will be staked by the contractor to mark the construction disturbance limits as shown in the project plans (Appendix A of the BA) and as approved by the project engineer before mobilization of equipment and material to the project site. Exotic plant species (*e.g.*, reed canary grass, Japanese knotweed, Himalyan blackberry) will be removed by mechanical means within the project limits of disturbance using an excavator or bulldozer. Herbicides will not be used as part of this project.[2] All native vegetation to be salvaged and transplanted will be marked within the limits of disturbance, and these plants will be stockpiled and stored for later replanting in the project area.

The contractor will stake and mark channel construction lines and grades and will install all necessary erosion control measures at the stockpile and staging area and along the areas of disturbance as shown on the project plans. Erosion control measures shall consist of all necessary measures required to prevent and contain potential soil erosion. Coffer dams and/or silt curtains will be used as silt barriers at all channel outlets and inlets when making connections to the mainstem Clackamas River.

Most of the earth-moving activities required to excavate the proposed side channels will occur in the dry. Excavated materials will be trucked off-site and placed in approved sites outside the 100-year floodplain. The following sequence will be followed when constructing the side channels at Sites 1, 2, and 3: (1) Place silt barrier/silt fence at lower end of channel; (2) construct the channel beginning at lower end and working upstream; (3) construct the downstream end of channel by pulling excavated material away from the riverbank and silt barrier; (4) after the first 50 feet of channel have been constructed, and before continuing to construct the channel upstream, place a series of two gravel check dams at the lower end of the channel but upstream from the silt barrier; (5) construct the remaining upstream portion of the channel; (6) maintain gravel check dams and remove accumulated silt as necessary; (7) decompact and seed all exposed soils and temporary access roads following project completion; and (8) remove silt barriers and gravel check dams upon final stabilization of the channel. At Site 1, the constructed log jams will be built between steps 6 and 7 of the above construction sequence.

Following construction of the side channels, the contractor shall clean up all disturbed areas, the construction site, and the staging area. The contractor shall remove all excess or remaining construction materials from the site.

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[2] Metro has previously treated Japanese knotweed on the project site by using direct injection of glyphosate. The clumps of dead knotweed will be mechanically removed.

Areas within the limits of disturbance will be seeded with a specified native seed mix. Erosion control measures will be removed following stabilization of disturbed areas. Riparian vegetation (shrubs and trees) will be planted by the contractor and/or volunteer groups and partnering agencies in the late fall/winter to maximize vegetation survival.

Site 1

Construction activities at Site 1 (side channel excavation, buried groundwater collection pipes, buried log jams) will require the excavation of approximately 12,342 cubic yards of material. Of this total, 4,940 cubic yards will be within wetlands and 273 cubic yards will be below the ordinary high water (OHW) elevation. As stated above, since channel construction will occur during low summer flows, most of the excavation will occur in the dry. Large wood imported from off-site locations will be placed at a density of approximately 10 pieces per 100 feet of channel length at selected locations along the entire length of the newly-constructed side channel. These logs range from 10 to 32 inches and average approximately 16 to18 inches in diameter. Approximately 25% of the logs will have root wads attached. Two constructed log jams will be buried along the north side of the side channel between the channel and the river. These log jams will each be approximately 40 to 60 feet long by 40 to 60 feet wide by 10 to 15 feet in depth, and will consist of logs and large (1 to 2 yard) boulders cabled together. Two buried, 12-inch diameter groundwater collection pipes designed to transport groundwater from the water collection galleries on Site 2 will be installed at separate locations near the upper end of the side channel at Site 1

Site 2

Construction activities at Site 2 (side channel excavation, installation of water collection galleries "A" and "B", buried groundwater collection pipes, buried log jams, and installation of the log structure at the channel inlet) will require the excavation of approximately 8,277 cubic yards of material. Of this total, 4,046 cubic yards will be within wetlands and 215 cubic yards will be below the OHW elevation. Again, most of the excavation will occur in the dry. Similar sized large wood will be placed at similar densities as at Site 1. Water collection galleries "A" and "B" will be constructed beneath and to the east of the side channel at Site 2, respectively. Groundwater will be transported from these collection galleries to the side channel at Site 1. Two constructed log jams (one on each side of the constructed side channel) will be buried near the lower end of the channel at Site 2. These log jams will be of similar size and of similar materials to those at Site 1. The inlet structure will consist of a buried sill log (minimum 24 inches in diameter) cabled to buried boulders and several other logs placed in a criss-crossed arrangement.

Site 3

Construction activities at Site 3 (modification of existing side channel) will require the excavation of approximately 993 cubic yards of material. Of that total, 626 cubic yards will be within wetlands and 366 cubic yards will be below the OHW elevation. Again, most of the excavation will occur in the dry. Similar sized large wood will be placed at similar densities as at Sites 1 and 2.

Conservation Measures

Project activities will include conservation measures which will limit or eliminate impacts associated with the project. These conservation measures are designed to limit the work area and provide barriers to potential sediment pathways to the Clackamas River. The silt barriers and check dams will minimize the effects of turbidity, sedimentation, chemical spills, and chemical/nutrient loading on ESA-listed salmonids and their habitat in the Clackamas River. Conservation measures were described in the BA, and are summarized as follows:

Control of Turbidity/Suspended Sediments

- Silt barriers/silt curtains will be installed at the downstream end of each side channel site (Sites 1, 2, and 3) before beginning excavation activities.

- Gravel check dams will be installed at the lower end of each side channel after construction of the first 50 feet of the channel to further control sediment.

- The vast majority of excavation activities will occur in the dry.

- Construction activities will occur when the Clackamas River is at low, summer flow conditions.

- During the construction period, the contractor will upgrade sediment control structures as needed for unexpected storm events and to ensure that sediment and sediment-laden water do not leave the project site.

- The contractor shall ensure that a supply of emergency erosion control materials (*e.g.*, silt fence, straw bales) are on site.

- All temporary fills, structures, and erosion control measures in waters of the United States shall be removed in their entirety within 20 days of project completion and the affected areas returned to their pre-existing conditions.

- Sediment will be removed from erosion control structures once it has reached 1/3 of the height of the control.

Timing of Construction Activities

- All in-water work shall be completed during the preferred in-water work period between July 15 and August 31. In-water work will not be allowed outside of this period without prior written approval from NOAA Fisheries.

Fish Rescue and Relocation

- Fish which become stranded when water is introduced into the constructed side channels from the Clackamas River will be rescued using nets, seines, or electrofishing equipment; then transported and released downstream from the project site.

Water Quality and Construction Monitoring

- All vehicle staging, cleaning, maintenance, refueling, and fuel storage will be 150 feet or more from any stream, waterbody or wetland.

- All construction debris will be properly disposed of on land in such a manner that it cannot enter into the waterway or cause water quality degradation.

- Instream turbidity will be monitored during construction and erosion controls inspected daily during rainy periods and weekly during dry periods or more often as necessary to ensure the erosion controls are working adequately.

- If monitoring shows that the erosion controls are ineffective, work crews will be mobilized immediately to make repairs, install replacements, or install additional controls as necessary.

- The contractor is responsible for providing a spill containment and control plan with notification procedures, specific cleanup and disposal instructions for different products, quick response containment and cleanup measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.

Revegetation

- Tree species to be planted include red alder, western red cedar, black cottonwood, and Oregon ash.

- Planting density for trees will be 10 feet on center.

- Shrub species to be planted include vine maple, salmonberry, Indian plum, Pacific ninebark, snowberry, red osier dogwood, Pacific willow, and Sitka willow.

- Planting density for shrubs will be 4 feet on center for all species except Pacific willow which will be 8 feet on center.

- Grass species to be planted include tufted hairgrass, blue wildrye, native red fescue, meadow barley, and western mannagrass.

- Native plants salvaged from the site during construction activities will be incorporated into the project revegetation plan to the extent feasible.

- All vegetation to be salvaged and transplanted will be marked within the limits of disturbance before beginning construction activities.

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Biological Information

The listing status and biological information for LCR and UWR Chinook salmon is provided in WCBRT (2003) and in Myers *et al.* (1998). Listing status and biological information for LCR steelhead is described in WCBRT (2003) and in Busby *et al.* (1996). The listing status and biological information for LCR coho salmon are described in WCBRT (2003) and in Weitkamp *et al*. (1995).

The Clackamas River within the project area provides rearing and migratory habitat for both adult and juvenile life stages of LCR and UWR Chinook salmon, LCR steelhead, and LCR coho salmon. It provides potential spawning habitat for LCR Chinook salmon (fall run). Essential features of the area for the species are: (1) Substrate; (2) water quality; (3) water quantity; (4) water temperature; (5) water velocity; (6) cover/shelter; (7) food (juvenile only); (8) riparian vegetation; (9) space; and (10) safe passage conditions (see, 65 FR 7764; Feb. 16, 2000). The proposed action may affect the essential habitat features of water quality and riparian vegetation.

2.1.2 Evaluating Proposed Actions

The standards for determining jeopardy and destruction or adverse modification of critical habitat are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). In conducting analyses of habitat-altering actions under section 7 of the ESA, NOAA Fisheries uses the following steps of the consultation regulations combined with the Habitat Approach (NMFS 1999): (1) Consider the status and biological requirements of the species; (2) evaluate the relevance of the environmental baseline in the action area to the species' current status; (3) determine the effects of the proposed or continuing action on the species and whether the action is consistent with the available recovery strategy; (4) consider cumulative effects; and (5) determine whether the proposed action, in light of the above factors is likely to appreciably reduce the likelihood of species survival in the wild or destroy or adversely modify critical habitat. In completing this step of the analysis, NOAA Fisheries determines whether the action under consultation, together with cumulative effects when added to the environmental baseline, is likely to jeopardize the ESA-listed species. If NOAA Fisheries finds that the action is likely to jeopardize the listed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action.

2.1.3 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA section 7(a)(2) to listed salmonids is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess to the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list the species for ESA protection and also considers new data available that is relevant to the determination.

The relevant biological requirements are those necessary for the listed species to survive and recover to a naturally-reproducing population level, at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance its capacity to adapt to various environmental conditions, and allow it to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful adult and juvenile spawning, rearing, and migration. Listed Pacific salmonid survival in the wild depends on the proper functioning of certain ecosystem processes, including habitat formation and maintenance. Restoring functional habitats depends largely on allowing natural processes to increase their ecological function, while removing adverse impacts of current practices. In conducting analyses of habitat-altering actions, NOAA Fisheries defines the biological requirements in terms of a concept called Properly Functioning Condition (PFC) and applies a "habitat approach" to its analysis (NMFS 1999). The current status of the listed species covered by this Opinion, based on their risk of extinction, has not significantly improved since they were considered for listing (WCBRT 2003).

2.1.4 Environmental Baseline

In step 2 of NOAA Fisheries' analysis, we evaluate the relevance of the environmental baseline in the action area to the species' current status. The environmental baseline is an analysis of the effects of past and ongoing human-caused and natural factors leading to the current status of the species or its habitat and ecosystem within the action area. The action area is defined by NOAA Fisheries regulations (50 CFR 402.02) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action."

The action area for this project, therefore, includes the streambed and streambanks of the Clackamas River from the upstream edge (approximately RM 13.2) of the area disturbed by proposed side channel, log jam, and temporary access road construction activities downstream to the extent of visible turbidity caused by the construction activities associated with the project and introduction of water into the newly-constructed side channels addressed in this Opinion.

The current population status and trends for LCR steelhead are described in WCBRT (2003) and in Busby *et al.* (1996); for LCR and UWR Chinook salmon in WCBRT (2003) and in Myers *et*

al. (1998); and for LCR coho salmon WCBRT (2003) and in Weitkamp *et al.* (1995). In general, the current status of these ESUs is the result of several long-term, human-induced factors (*e.g.,* habitat degradation, water diversions, hydropower dams) that serve to exacerbate the adverse effects of natural environmental variability from such factors as drought, floods, and poor ocean conditions.

Environmental baseline conditions within the action area were evaluated for the subject action at the project level and watershed scales. The BA cited a March 4, 2003, NOAA Fisheries biological opinion (NOAA Fisheries No.: 2002/00477) to describe environmental baseline conditions in the lower Clackamas River. That biological opinion used the "matrix of pathways and indicators" (MPI) described in "Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale"(NMFS 1996). This method assesses the current conditions of instream, riparian, and watershed factors that collectively provide properly functioning aquatic habitat essential for the survival and recovery of the species.

For the lower Clackamas River, two of the 15 indicators for which data were available were rated as properly functioning. These were water temperature and sediment/turbidity. Four indicators were rated as functioning "at risk." These were off-channel habitat, refugia, width/depth ratio, and disturbance history. The chemical contaminants/nutrients, physical barriers, substrate, large woody debris, pool frequency and quality, peak/base flows, drainage network increase, road density and location, and riparian reserve indicators were rated as not properly functioning. The environmental baseline conditions for each habitat indicator in the MPI are described on pages 12 to 16 of the BA and incorporated herein by reference. The Clackamas River, from its mouth to RM 15, including the proposed project area at RM 13.2, is listed on the Oregon Department of Environmental Quality (ODEQ) 303(d) list as water quality limited for summertime water temperature and impaired for *E. coli* bacteria.

Vegetation on the project site is dominated by black cottonwood, big-leaf maple, red alder, Indian plum, beaked hazelnut, snowberry, Himalayan blackberry, and reed canarygrass. Small numbers of western red cedar are scattered about the property as well. Wetlands are present and limited to sections of the property lying within depressions created by historic Clackamas River channel alignments. Wetlands with ponded water are seasonal and dry in summer months. Wetland vegetation generally consists of reed canarygrass, willow, red-osier dogwood, Himalayan blackberry, Oregon ash, red alder, and black cottonwood.

Soils within the project area consist of sandy loam to loamy fine sand, to varying depths, overlying river alluvium. Near surface groundwater hydrology on the site is generally linked to river stage.

2.1.5 Effects of Proposed Action

In step 3 of the jeopardy analysis, NOAA Fisheries evaluates the effects of the proposed action on listed fish and their habitat.

Short-Term Effects

Introduction of water from the Clackamas River into the newly-constructed side channels at Sites 1 and 2 will result in a short-term increase in stream turbidity in the Clackamas River at the project site and downstream. Removal of material at the lower end of the existing side channel at Site 3 and installation of the inlet control structure at the upstream end of the side channel at Site 2 could also result in a short-term increase in turbidity in the river. As described above, most of the actual construction work (excavation of new side channels, excavation of groundwater collection galleries and buried groundwater conveyance pipes, and installation of buried log jams) will occur in the dry, so sediment transport to the river from these activities is expected to be minimal.

Behavioral avoidance of turbid waters may be one of the most important effects of suspended sediments (DeVore *et al.* 1980, Birtwell *et al.* 1984, Scannell 1988). Salmonids have been observed to move laterally and downstream to avoid turbid plumes (McLeay *et al.* 1984, 1987, Sigler *et al.* 1984, Lloyd 1987, Scannell 1988, Servizi and Martens 1991). Juvenile salmonids tend to avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, except when the fish need to traverse these streams along migration routes (Lloyd *et al.* 1987). In addition, a potentially positive reported effect is providing refuge and cover from predation (Gregory and Levings 1998).

Salmonids have evolved in systems that periodically experience short-term pulses (days to weeks) of high suspended sediment loads, often associated with flood events, and are adapted to such high pulse exposures. Adult and larger juvenile salmonids appear to be little affected by the high concentrations of suspended sediments that occur during storm and snowmelt runoff episodes (Bjorn and Reiser 1991). However, research indicates that chronic exposure can cause physiological stress responses that can increase maintenance energy and reduce feeding and growth (Redding *et al.* 1987, Lloyd 1987, Servizi and Martens 1991).

Implementation of sediment control measures described in section 1.2 above are expected to minimize transport of sediment in the Clackamas River at the project site and downstream from it and minimize the area of potential increased turbidity.

As with all construction activities, accidental release of fuel, oil, and other contaminants may occur. Operation of heavy equipment requires the use of fuels and lubricants which, if spilled in the stream channel or in the adjacent riparian area, can injure or kill aquatic organisms. Petroleum-based contaminants, such as fuel, oil, and some hydraulic fluids, contain poly-cyclic aromatic hydrocarbons (PAHs) which can be acutely toxic to salmonids at high levels of exposure and can also cause chronic lethal and acute and chronic sublethal effects to aquatic organisms (Neff 1985). The potential for pollutants to enter the stream will be minimized by staging fuels and equipment in approved areas, by having a spill control plan, and by having spill control materials on site.

Since juvenile LCR and UWR Chinook salmon, LCR steelhead, and LCR coho salmon may be present in the proposed project area even during the preferred in-water work period of July 15-

August 31, direct harm to these listed fishes may occur when water from the Clackamas River is introduced into the newly-constructed side channels. Fish could become trapped in the silt curtains or by the coffer dams. Removal and relocation of any trapped fish could result in morality and/or injury to fish during handling. Because summer water temperatures are warm in the Clackamas River in the project area, few juvenile salmonids are expected to be present when in-water work is performed. Estimating that up to 100 each of ESA-listed juvenile Chinook salmon, coho salmon, and steelhead may be captured and released during introduction of water to the newly-constructed side channels and the work area isolation, and assuming a 5% direct or delayed mortality rate for those fish that are captured and relocated, the fish salvage and removal associated with the proposed project could result in lethal take of up to five of each species of ESA-listed salmonids.

Long-Term Beneficial Effects

All three sites (side channels) are expected to provide refugia for juvenile salmonids during high flow events in the Clackamas River as well as winter rearing habitat. Construction of approximately 4,400 linear feet of new side channel habitat (Sites 1 and 2) and modification of an existing side channel at Site 3 will provide important side channel habitat in a reach of the Clackamas River where this type of habitat is lacking. Addition of large woody debris to the side channels and construction of engineered log jams in the vicinity of the side channels will improve fish habitat complexity. Construction of the groundwater-fed channel at Site 1 will, potentially, provide summer rearing habitat and thermal refugia.

All areas along the banks of the constructed side channels (Sites 1 and 2) and along the lower end of the existing side channel (Site 3) will be planted with native varieties of trees (red alder, western red cedar, black cottonwood, and Oregon ash), shrubs (vine maple, salmonberry, Indian plum, Pacific ninebark, and snowberry), and grass seed mix (tufted hairgrass, blue wildrye, native red fescue, meadow barley, and western mannagrass). Over time, the plantings will improve habitat conditions including microclimate (light, temperature, humidity), contribution of organic matter and woody debris to the channel and resistance to erosion through root strength (Gregory *et al.* 1991). Degree of shading of streams is a function of the structure and composition of riparian vegetation (Gregory *et al.* 1991). As the vegetation matures over time, it will contribute to the improvement of habitat functions. There are no adverse effects to salmonids from the planting of riparian vegetation.

2.1.6 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as those effects of "future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." This is step 4 in NOAA Fisheries' analysis process. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes. Therefore, these actions are not considered cumulative to the proposed action.

NOAA Fisheries is not aware of any specific future non-federal activities within the action area that would cause greater impacts to listed species than presently occurs. However, development of structures and vegetation clearing along the streams is likely to continue. NOAA Fisheries assumes that future private and state actions will continue at similar intensities as in recent years**.**

2.1.7 Conclusion

The final step in NOAA Fisheries' approach to determine jeopardy is to determine whether the proposed action is likely to appreciably reduce the likelihood of species survival or recovery in the wild. NOAA Fisheries has determined that when the effects of the proposed action addressed in this Opinion are added to the environmental baseline and cumulative effects occurring in the action area, it is not likely to jeopardize the continued existence of listed or proposed salmonids.

These conclusions are based on the following considerations: (1) All in-water work will be completed within the preferred in-water work window for the Clackamas River between July 15 and August 31; (2) sediment control measures are expected to minimize sediment transport and thus minimize turbidity increases in the action area; (3) the vast majority of excavation activities will occur in the dry; (4) any turbidity increases which do occur are expected to be of short duration; (5) because of warm summer water temperatures in the lower Clackamas River, few juvenile salmonids are expected to be rearing in the project area at the time the in-water work is performed or when water is introduced into the constructed side channels; (6) implementation of the project will provide important side channel rearing and refugia habitat in a reach of the Clackamas River where this type of habitat is lacking; (7) addition of large woody debris to the side channels and construction of engineered log jams will improve habitat complexity in the reach; and (8) the proposed action is not likely to impair properly functioning habitat, or retard the long-term progress of impaired habitat toward proper functioning condition essential to the long-term survival and recovery at the population or ESU scale.

2.1.8 Reinitiation of Consultation

Reinitiation of formal consultation is required and shall be requested by the Federal agency or by the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) If the amount or extent of taking specified in the incidental take statement is exceeded; (b) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (c) If the identified action is subsequently modified in a manner that has an effect to the listed species or critical habitat that was not considered in the Opinion; or (d) If a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16).

2.2 Incidental Take Statement

The ESA at section 9 [16 USC 1538] prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonids by section 4(d) rule [50 CFR 223.203].

Take is defined by the statute as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." [16 USC 1532(19)] Harm is defined by regulation as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering." [50 CFR 222.102] Harass is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering." [50 CFR 17.3] Incidental take is defined as "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant." [50 CFR 402.02] The ESA at section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement [16 USC 1536].

An incidental take statement specifies the impact of any incidental taking of threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply to implement the reasonable and prudent measures. However, the incidental take statement included in this conference opinion does not become effective for the LCR coho salmon ESU until NOAA Fisheries adopts the conference opinion as a biological opinion, after the listing is final. Until the time that the LCR coho salmon ESU listed, the prohibitions of the ESA do not apply.

2.2.1 Amount or Extent of the Take

NOAA Fisheries anticipates that up to 100 each of ESA-listed juvenile Chinook salmon, coho salmon, and steelhead will be captured and released during introduction of water to the newly-constructed side channels and the work area isolation. Assuming a 5% direct or delayed mortality rate for those fish captured and moved, the fish salvage and removal associated with the proposed project will kill up to five individuals of each of the subject ESUs.

Further, NOAA Fisheries expects the habitat-related effects of the proposed action will harm other individuals of the subject ESUs within the action area, although the best scientific and commercial data available are not sufficient to enable NOAA Fisheries to attribute a specific amount of incidental take to those effects. In instances such as these, NOAA Fisheries provides a measurable level of habitat disturbance or change that is causally related to the effects of the proposed action to provide a yardstick for reinitiation. For this consultation, the extent of take will be limited to the temporary harm to riparian and aquatic habitats, and to water quality, that will be caused by construction of a 2,600-foot long side channel at Site 1, and 1,650 foot-long side channel at Site 2, and modification of the existing side channel entrance at Site 3, as described in the proposed action.

2.2.2 Reasonable and Prudent Measures

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to avoid or minimize take of listed salmonid species resulting from the action covered by this Opinion. The COE shall:

1. Minimize the likelihood of incidental take from construction activities by applying permit conditions to avoid or minimize disturbance to riparian and aquatic systems.

2. Complete a comprehensive monitoring and reporting program to ensure this Opinion is meeting its objective of minimizing the likelihood of take from permitted activities.

2.2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the COE must require that the applicant (Oregon Wildlife Heritage Foundation) and/or their contractors comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure #1 (construction activities), the COE shall ensure that:

    a. Minimum area. Confine construction impacts to the minimum area necessary to complete the project.
    b. Timing of in-water work. Work below the bankfull elevation[3] will be completed between July 15 and August 31, unless otherwise approved in writing by NOAA Fisheries.
    c. Cessation of work. Cease project operations under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.
    d. Fish screens. Have a fish screen installed, operated and maintained according to NOAA Fisheries' fish screen criteria[4] on each water intake used for project construction, including pumps used to isolate an in-water work area.
    e. Pollution and Erosion Control Plan. Prepare and carry out a pollution and erosion control plan to prevent pollution caused by surveying or construction operations. The plan must be available for inspection on request by the COE or NOAA Fisheries.

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[3] 'Bankfull elevation' means the bank height inundated by a 1.5 to 2-year average recurrence interval and may be estimated by morphological features such average bank height, scour lines and vegetation limits.

[4] National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria for Pump Intakes* (May 9, 1996) (guidelines and criteria for migrant fish passage facilities, and new pump intakes and existing inadequate pump intake screens) (http://www.nwr.noaa.gov/1hydrop/hydroweb/ferc.htm).

i. Plan Contents. The pollution and erosion control plan will contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.
   (1) The name and address of the party(s) responsible for accomplishment of the pollution and erosion control plan.
   (2) Practices to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, haul roads, equipment and material storage sites, fueling operations, staging areas, and roads being decommissioned.
   (3) A description of any regulated or hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.
   (4) A spill containment and control plan with notification procedures, specific cleanup and disposal instructions for different products, quick response containment and cleanup measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.
   (5) Practices to prevent construction debris from dropping into any stream or waterbody, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

ii. Inspection of erosion controls. During construction, monitor instream turbidity and inspect all erosion controls daily during the rainy season and weekly during the dry season, or more often as necessary, to ensure the erosion controls are working adequately.[5]
   (1) If monitoring or inspection shows that the erosion controls are ineffective, mobilize work crews immediately to make repairs, install replacements, or install additional controls as necessary.
   (2) Remove sediment from erosion controls once it has reached 1/3 of the exposed height of the control.

f. Construction discharge water. Treat all discharge water created by construction (*e.g.*, pumping for work area isolation, vehicle wash water) as follows.

i. Water quality. Design, build and maintain facilities to collect and treat all construction discharge water using the best available technology applicable to site conditions. Provide treatment to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

ii. Pollutants. Do not allow pollutants, including contaminated water and silt, to contact any wetland or the 2-year floodplain.

[5] 'Working adequately' means that project activities do not increase ambient stream turbidity by more than 10% above background 100 feet below the discharge, when measured relative to a control point immediately upstream of the turbidity causing activity.

g. Preconstruction activity. Complete the following actions before significant[6] alteration of the project area.

i. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.

ii. Emergency erosion controls. Ensure that the following materials for emergency erosion control are onsite.

(1) A supply of sediment control materials (*e.g.*, silt fence, straw bales[7]).

(2) An oil-absorbing, floating boom whenever surface water is present.

iii. Temporary erosion controls. All temporary erosion controls will be in-place and appropriately installed downslope of project activity within the riparian area until site restoration is complete.

h. Temporary access roads. All temporary access roads will be constructed as follows.

i. Existing ways. Use existing roadways, travel paths, and drilling pads whenever possible, unless construction of a new way or drilling pad will result in less habitat take. When feasible, eliminate the need for an access road by walking a tracked drill or spider hoe to a survey site, or lower drilling equipment to a survey site using a crane.

ii. Steep slopes. Temporary roads or drilling pads built mid-slope or on slopes steeper than 30% are not authorized.

iii. Minimizing soil disturbance and compaction. Minimize soil disturbance and compaction whenever a new temporary road or drill pad is necessary within 150 feet[8] of a stream, waterbody or wetland by clearing vegetation to ground level and placing clean gravel over geotextile fabric, unless otherwise approved in writing by NOAA Fisheries.

iv. Temporary stream crossings.

(1) Minimize the number of temporary stream crossings.

(2) Vehicles and machinery will cross riparian areas and streams at right angles to the main channel wherever possible.

v. Obliteration. When the project is complete, obliterate all temporary access roads, stabilize the soil, and revegetate the site. Abandon and

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[6] 'Significant' means an effect can be meaningfully measured, detected or evaluated.

[7] When available, certified weed-free straw or hay bales will be used to prevent introduction of noxious weeds.

[8] Distances from a stream or waterbody are measured horizontally from, and perpendicular to, the bankfull elevation, the edge of the channel migration zone, or the edge of any associated wetland, whichever is greater. 'Channel migration zone' means the area defined by the lateral extent of likely movement along a stream reach as shown by evidence of active stream channel movement over the past 100 years (*e.g.*, alluvial fans or floodplains formed where the channel gradient decreases, the valley abruptly widens, or at the confluence of larger streams).

restore temporary roads in wet or flooded areas by the end of the in-water work period.

i. Heavy Equipment. Restrict use of heavy equipment as follows:
   i. Choice of equipment. When heavy equipment will be used, the equipment selected will have the least adverse effects on the environment (*e.g.*, minimally-sized, low ground pressure equipment).
   ii. Vehicle and material staging. Store construction materials, and fuel, operate, maintain and store vehicles as follows.
      (1) To reduce the staging area and potential for contamination, ensure that only enough supplies and equipment to complete a specific job will be stored on-site.
      (2) Complete vehicle staging, cleaning, maintenance, refueling, and fuel storage in a vehicle staging area placed 150 feet or more from any stream, waterbody or wetland, unless otherwise approved in writing by NOAA Fisheries.
      (3) Inspect all vehicles operated within 150 feet of any stream, waterbody or wetland daily for fluid leaks before leaving the vehicle staging area. Repair any leaks detected in the vehicle staging area before the vehicle resumes operation. Document inspections in a record that is available for review on request by COE or NOAA Fisheries.
      (4) Before operations begin and as often as necessary during operation, steam clean all equipment that will be used below bankfull elevation until all visible external oil, grease, mud, and other visible contaminates are removed.
      (5) Diaper all stationary power equipment (*e.g.*, generators, cranes, stationary drilling equipment) operated within 150 feet of any stream, waterbody or wetland to prevent leaks, unless suitable containment is provided to prevent potential spills from entering any stream or waterbody.

j. Site preparation. Conserve native materials for site restoration.
   i. If possible, leave native materials where they are found.
   ii. If materials are moved, damaged or destroyed, replace them with a functional equivalent during site restoration.
   iii. Stockpile any large wood,[9] native vegetation, weed-free topsoil, and native channel material displaced by construction for use during site restoration.

[9] For purposes of this Opinion only, 'large wood' means a tree, log, or rootwad big enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull channel width of the stream in which the wood occurs. See, Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc).

k. Isolation of in-water work area. If adult or juvenile fish are reasonably certain to be present, or if the work area is 300 feet upstream of spawning habitats, completely isolate the work area from the active flowing stream using inflatable bags, sandbags, sheet pilings, or similar materials, unless otherwise approved in writing by NOAA Fisheries.

l. Capture and release. Attempt to capture and release fish from the isolated area using trapping, seining, electrofishing, or other methods as are prudent to minimize risk of injury.

i. The entire capture and release operation must be conducted or supervised by a fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish.

ii. Do not use electrofishing if water temperatures exceed 18°C.

iii. If electrofishing equipment is used to capture fish, comply with NOAA Fisheries' electrofishing guidelines.[10]

iv. Handle ESA-listed fish with extreme care, keeping fish in water to the maximum extent possible during seining and transfer procedures to prevent the added stress of out-of-water handling.

v. Transport fish in aerated buckets or tanks.

vi. Release fish into a safe release site as quickly as possible, and as near as possible to capture sites.

vii. Do not transfer ESA-listed fish to anyone except NOAA Fisheries personnel, unless otherwise approved in writing by NOAA Fisheries.

viii. Obtain all other Federal, state, and local permits necessary to conduct the capture and release activity.

ix. Allow NOAA Fisheries or its designated representative to accompany the capture team during the capture and release activity, and to inspect the team's capture and release records and facilities.

m. Earthwork. Complete earthwork (including drilling, excavation, dredging, filling and compacting) as quickly as possible.

I. Site stabilization. Stabilize all disturbed areas, including obliteration of temporary roads, following any break in work unless construction will resume within four days.

ii. Source of materials. Obtain boulders, rock, woody materials and other natural construction materials used for the project outside the riparian area.

n. Site restoration. Prepare and carry out a site restoration plan as necessary to ensure that all streambanks, soils and vegetation disturbed by the project are cleaned up and restored as follows. Make the written plan available for inspection on request by the COE or NOAA Fisheries.

i. General considerations.

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[10] National Marine Fisheries Service, *Backpack Electrofishing Guidelines* (December 1998) (http://www.nwr.noaa.gov/1salmon/salmesa/pubs/electrog.pdf).

(1) Restoration goal. The goal of site restoration is renewal of habitat access, water quality, production of habitat elements (*e.g.*, large woody debris), channel conditions, flows, watershed conditions and other ecosystem processes that form and maintain productive fish habitats.

(2) Streambank shaping. Restore damaged streambanks to a natural slope, pattern and profile suitable for establishment of permanent woody vegetation, unless precluded by pre-project conditions (*e.g.*, a natural rock wall).

(3) Revegetation. Replant each area requiring revegetation before the first April 15 following construction. Use a diverse assemblage of species native to the project area or region, including grasses, forbs, shrubs and trees. Noxious or invasive species may not be used.

(4) Pesticides. Take of ESA-listed species caused by any aspect of pesticide use is not included in the exemption to the ESA take prohibitions provided by this incidental take statement. Pesticide use must be evaluated in an individual consultation, although mechanical or other methods may be used to control weeds and unwanted vegetation.

(5) Fertilizer. Do not apply surface fertilizer within 50 feet of any stream channel.

(6) Fencing. Install fencing as necessary to prevent access to revegetated sites by livestock or unauthorized persons.

ii. Plan contents. Include each of the following elements.

(1) Responsible party. The name and address of the party(s) responsible for meeting each component of the site restoration requirements, including providing and managing any financial assurances and monitoring necessary to ensure restoration success.

(2) Baseline information. This information may be obtained from existing sources (*e.g.*, land use plans, watershed analyses, subbasin plans), where available.

(a) A functional assessment of adverse effects, *i.e.*, the location, extent and function of the riparian and aquatic resources that will be adversely affected by construction and operation of the project.

(b) The location and extent of resources surrounding the restoration site, including historic and existing conditions.

(3) Goals and objectives. Restoration goals and objectives that describe the extent of site restoration necessary to offset adverse effects of the project, by aquatic resource type.

(4) Performance standards. Use these standards to help design the plan and to assess whether the restoration goal is met. While no single criterion is sufficient to measure success, the intent is that

these features should be present within reasonable limits of natural and management variation.

(a) Bare soil spaces are small and well dispersed.

(b) Soil movement, such as active rills or gullies and soil deposition around plants or in small basins, is absent or slight and local.

(c) If areas with past erosion are present, they are completely stabilized and healed.

(d) Plant litter is well distributed and effective in protecting the soil with few or no litter dams present.

(e) Native woody and herbaceous vegetation, and germination microsites, are present and well distributed across the site.

(f) Vegetation structure is resulting in rooting throughout the available soil profile.

(g) Plants have normal, vigorous growth form, and a high probability of remaining vigorous, healthy and dominant over undesired competing vegetation.

(h) High impact conditions confined to small areas necessary access or other special management situations.

(i) Streambanks have less than 5% exposed soils with margins anchored by deeply rooted vegetation or coarse-grained alluvial debris.

(j) Few upland plants are in valley bottom locations, and a continuous corridor of shrubs and trees provide shade for the entire streambank.

(5) Work plan. Develop a work plan with sufficient detail to include a description of the following elements, as applicable.

(a) Boundaries for the restoration area.

(b) Restoration methods, timing, and sequence.

(c) Water supply source, if necessary.

(d) Woody native vegetation appropriate to the restoration site.[11] This must be a diverse assemblage of species that are native to the project area or region, including grasses, forbs, shrubs and trees. This may include allowances for natural regeneration from an existing seed bank or planting.

(e) A plan to control exotic invasive vegetation.

(f) Elevation(s) and slope(s) of the restoration area to ensure they conform with required elevation and hydrologic requirements of target plant species.

(g) Geomorphology and habitat features of stream or other open water.

[11] Use references sites to select vegetation for the mitigation site whenever feasible. Historic reconstruction, vegetation models, or other ecologically-based methods may also be used as appropriate.

(h) Site management and maintenance requirements.

(6) Five-year monitoring and maintenance plan.

(a) A schedule to visit the restoration site annually for 5 years or longer as necessary to confirm that the performance standards are achieved. Despite the initial 5-year planning period, site visits and monitoring will continue from year-to-year until the COE certifies that site restoration performance standards have been met.

(b) During each visit, inspect for and correct any factors that may prevent attainment of performance standards (*e.g.*, low plant survival, invasive species, wildlife damage, drought).

(c) Keep a written record to document the date of each visit, site conditions and any corrective actions taken.

2. To implement reasonable and prudent measure #2 (monitoring), the COE shall:

a. Monitoring. Within 120 days of completing the project, the COE will submit a monitoring report to NOAA Fisheries describing the COE's success meeting these terms and conditions. This report will consist of the following information.

i. Project identification.

(1) Project name.

(2) Starting and ending dates of work completed for this project.

(3) Name and address of the construction supervisor.

ii. Photographic documentation of environmental conditions at the project site before, during and after project completion.

(1) Photographs will include general project location views and close-ups showing details of the project area and project, including pre and post construction.

(2) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.

iii. Relevant habitat conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

b. If a dead, injured, or sick endangered or threatened species specimen is found, initial notification must be made to the National Marine Fishery Service Law Enforcement Office, at the Vancouver Field Office, 600 Maritime, Suite 130, Vancouver, Washington 98661; telephone: 360/418-4246. Care should be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered and threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions

provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

c. Monitoring reports will be submitted to:

NOAA Fisheries
Oregon Habitat Branch
Attn: 2004/00616
525 NE Oregon Street
Portland, OR 97232

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Background

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of EFH: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50CFR600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;

- NOAA Fisheries shall provide conservation recommendations for any Federal or state activity that may adversely affect EFH;

- Federal agencies shall within 30 days after receiving conservation recommendations from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation

recommendations of NOAA Fisheries, the Federal agency shall explain its reason for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.2 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: Chinook (*Oncorhynchus tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based on this information.

3.3 Proposed Action

The proposed action is detailed above in section 1.2 of this document. The action area includes the Clackamas River. This area has been designated as EFH for various life stages of Chinook and coho salmon.

3.4 Effects of Proposed Action

As described in detail in the ESA portion of this consultation, the proposed activities would result in detrimental, short-term, adverse effects to a variety of habitat parameters.

3.5 Conclusion

NOAA Fisheries believes that the proposed action will adversely affect the EFH for Chinook and coho salmon.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. In addition to conservation measures proposed for the project by the COE, all of the terms

and conditions contained in section 2.2.4 of the ESA portion of this Opinion are applicable to salmon EFH, except those related to in-water timing and fish capture and release. Therefore, NOAA Fisheries incorporates each of those measures here as EFH conservation recommendations.

3.7 Statutory Response Requirement

The MSA (section 305(b)) and 50 CFR 600.920(j) requires the COE to provide a written response to NOAA Fisheries' EFH conservation recommendations within 30 days of its receipt of this letter. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. If the response is inconsistent with NOAA Fisheries' conservation recommendations, the COE shall explain its reasons for not following the recommendations.

3.8 Supplemental Consultation

The COE must reinitiate EFH consultation with NOAA Fisheries if either the action is substantially revised or new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920).

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